

REMARKS

In the Office Action, the Examiner rejected claims 21-23 under 35 U.S.C. §112, 1st paragraph, rejected claims 1-2, 6, 8, 32, 37-39, and 41-42 under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,351,516 issued to Mazor et al., claim 37 is rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 4,162,528 issue to Maldonado et al., claims 1-2, 4, 11-12, 14, 16-17, 32, 34, 36-41 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 4,962,516 to Soezima in view of U.S. Patent No. 5,210,414 issued to Wallaee et al., and claims 6-9 and 18 are rejected under 35 U.S.C. §103(a) as being unpatentable over Soezima and Wallace et al. and further in view of U.S. Patent No. 5,703,361 issued to Sartore.

Claims 1, 11, 22-23, and 37 have been amended. Claims 6, 17, 21, and 42 have been cancelled without prejudice or disclaimer. Claims 1, 2, 4, 7-9, 11, 12, 14, 16, 18, 22-23, 32, and 34-41 are now pending in this application.

REJECTION OF CLAIMS 21-23 UNDER 35 U.S.C. §112, 1st PARAGRAPH

Claim 11 has been amended to include the limitations of claims 17 and 21. Claim 11 has also been amended to specify that the data collected during the collecting operation is “raw data.” This amendment provides the antecedent basis for the “raw data” recited in newly amended claims 22 and 23. As such, it is respectfully requested that the rejection under 35 U.S.C. §112, 1st paragraph be withdrawn.

PATENTABILITY OF CLAIMS

The inventions of claims 1 and 37 pertain to an apparatus wherein a charged particle beam completely penetrates at least two layers of a film stack wherein two of the layers that are completely penetrated are a conductive film layer and a liner film layer. In contrast, none of references teach or suggest a charged particle beam that completely penetrates at least two layers of a film stack wherein two of the layers that are completely penetrated are a conductive film layer and a liner film layer. With specific reference to Mazor et al., it is respectfully submitted that Mazor et al. teaches three conductive layers of tantalum 26, copper 28, and copper 30. However, Mazor et al. does not teach or suggest a conductive film layer and a liner film layer that are penetrated by a charged particle beam.

Claim 11 pertains to a method for measuring at least one characteristic of a film stack by using an iterative algorithm that utilizes estimates of film stack characteristic values and modeling equations. This algorithm involves selecting estimated film stack characteristic values and inputting such values into equations that model a film stack in order to generate predicted data values. Then the predicted data is compared against raw data that is collected from the actual film stack. This process is repeated while the difference in values between the predicted data and the raw data is larger than a predetermined margin of error. As recited in claim 22, when the predicted data values are sufficiently close in value to the raw data, it is determined that the estimated film stack characteristic values are an acceptable estimate of the actual film stack characteristics.

In contrast, none of the cited references teach or suggest a method for measuring film stack characteristic values by using estimated film stack characteristic values. Furthermore, none of the cited references teach or suggest an operation of comparing predicted data, which is obtained through using the estimated film stack characteristic values with equations that model the film stack, against the raw data that is collected. Maldonado et al. teaches the use of algorithms for measuring film thicknesses, however these algorithms do not use estimated film stack characteristic values as recited in claim 11. Maldonado et al. also does not teach the comparison of predicted data against raw data that is collected as recited in claim 11.

It is submitted that Mazor et al., Maldonado et al., Soezima, Sartore, and Wallae et al., alone or in any combination, do not teach or suggest the features of the claimed inventions. Therefore, it is submitted that claims 1, 11, and 37 are patentably distinct from the cited references.

It is submitted that dependent claims 2, 4, 7-9, 12, 14, 16-18, 22-23, 32, 34-36, and 38-41 are also patentably distinct from the cited references for at least the same reasons as those recited above for their corresponding independent claims. These dependent claims further recite additional limitations that further distinguish these dependent claims from the cited references. Thus, it is respectfully requested that the Examiner withdraw the rejection of claims 1, 2, 4, 7-9, 11, 12, 14, 16, 18, 22-23, 32, and 34-41 under 35 U.S.C §§ 102(e) and 103(a).

SUMMARY

It is respectfully submitted that all pending claims are allowable and that this case is now in condition for allowance. Should the Examiner believe that a telephone conference would

expedite the prosecution of this application, the undersigned can be reached at the telephone number set out below.

If any fees are due in connection with the filing of this Amendment, the Commissioner is authorized to deduct such fees from the undersigned's Deposit Account No. 500388 (Order No. KLA1P012).

Respectfully submitted,
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